

Agilent 1260 Infinity GPC/SEC System

Precise and reproducible polymer characterization

Data Sheet

Introduction

Gel permeation chromatography (GPC), also referred to as size exclusion chromatography (SEC), is the technique of choice to characterize polymers. Molecular weight averages and molecular weight distributions are calculated based on the polymer elution behavior. The Agilent 1260 Infinity GPC/SEC System offers excellent retention time precision for reproducible, precise molecular weights.

The 1260 Infinity GPC/SEC System is designed for cost-effective, routine polymer characterization with refractive index, UV-visible or evaporative light scattering detectors. It is based on the reliable Agilent 1200 Infinity Series LC modules. Instrument control, data acquisition and analysis can be performed with the easy-to-use Agilent GPC/SEC software.



Agilent Technologies

New level of molecular weight data precision

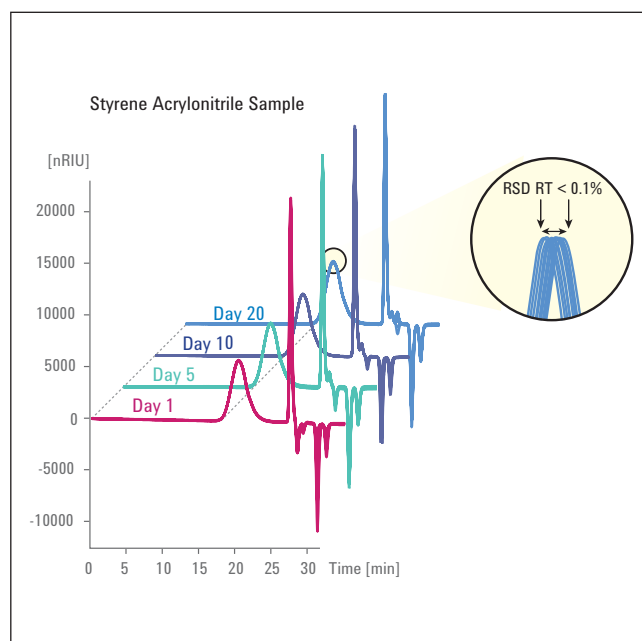
The excellent flow precision of the Agilent 1260 Infinity Series pump and the superior column thermostat stability from 10 degrees below ambient to 80 °C ensure retention time precision below 0.1% RSD. Moreover, intraday and interday repeatability is outstanding.

Extreme robustness

For any modern laboratory, a dependable and reliable system is essential to ensure high sample throughput and lab efficiency. The Agilent 1260 Infinity LC has a proven robust design for long instrument uptime. Reduced operating and maintenance costs mean a low total cost of ownership. And because it's from Agilent, you get everything you expect from a chromatography leader with over 35 years of innovative contributions to GPC/SEC technology.

Excellent performance

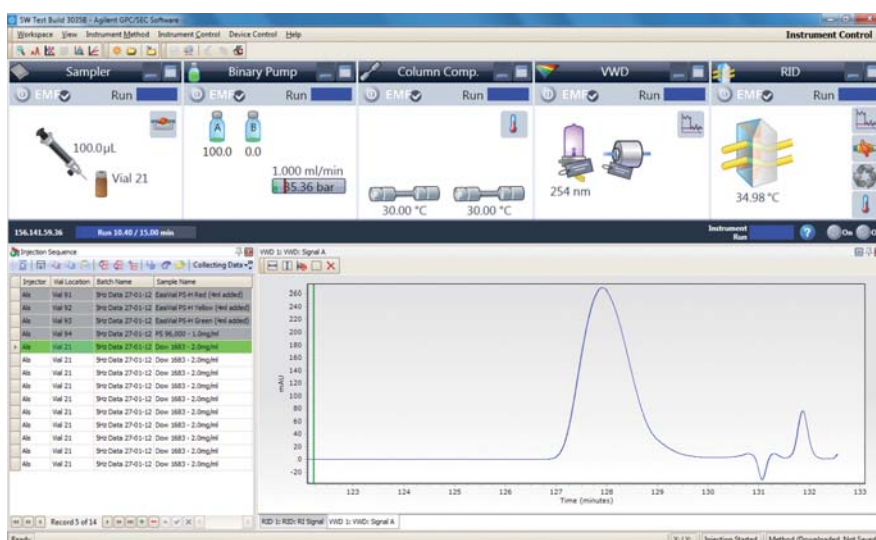
The Agilent 1260 Infinity LC modules provide fast and sensitive detection of your polymer analyte. The Agilent 1260 Infinity Refractive Index Detector (RID) is the perfect partner for GPC/SEC. It combines exceptional baseline stability with a built-in solvent recycle valve for reduced waste. The Agilent 1260 Infinity Standard Autosampler provides reliable injections from 0.1 µL to 100 µL. The system is easily adaptable to increase injection volumes up to 1500 µL for semi-preparative GPC/SEC.



This overlay of 10 consecutive runs per day over 20 days shows the remarkable daily and day-to-day precision of retention times. The average RSD for retention times is 0.035%.

Agilent GPC/SEC software

The 1260 Infinity GPC/SEC System is fully controlled with the new Agilent GPC/SEC software – a dedicated solution software package, capable of controlling all of the 1200 Infinity Series LC modules – with a simple and intuitive interface.

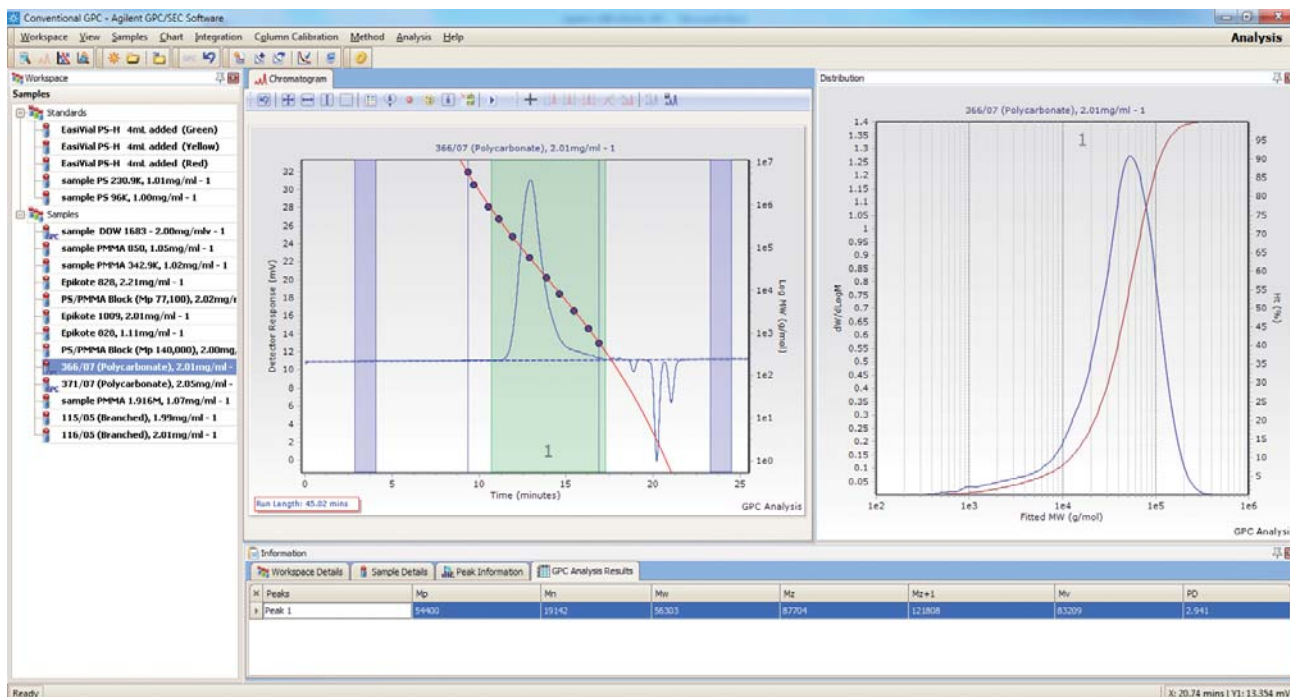


The Agilent GPC/SEC software has exactly the same look-and-feel as the Agilent OpenLAB CDS ChemStation Edition software for HPLC. That means it's easy for you to move from one system to another when you deploy both techniques in your laboratory.

Versatile and flexible

The graphical interface can be customized to suit any user, from a simple uncluttered display to a complete, accessible view of all of the available information. This makes the software easy to use for both beginners as well as experts.

With quick system set up and control, easy data collection and intuitive analysis, Agilent's GPC/SEC software simplifies and facilitates the workflow.



Raw data chromatogram and molecular weight distribution from analysis of a polycarbonate sample .

System details

A complete Agilent 1260 Infinity GPC/SEC System includes:

- Agilent 1260 Infinity Degasser reduces baseline noise due to high degassing capacity.
- Agilent 1260 Infinity Isocratic Pump for flow precision < 0.1% RSD
- Agilent 1260 Infinity Autosampler with single valve design
- Agilent 1260 Infinity Thermostatted Column Compartment for temperatures from 10 degrees below ambient up to 80 °C and temperature precision of ± 0.15 °C; for up to three full-length, 30 cm columns.
- Agilent 1260 Infinity Refractive Index Detector with an automatic recycle valve
- Agilent GPC/SEC software for fast and easy control and analysis
- A variety of GPC/SEC columns for organic and aqueous eluents are available, with a complementary range of standards
- A variety of 1200 Infinity detectors available to suit application
- Reference primers and application compendiums
- Upgradable to advanced GPC using the Agilent 1260 Infinity GPC/SEC Multi-Detector Suite

Specifications

Agilent 1260 Infinity Standard Degasser	
Maximum flow rate	10 mL/min per channel
Number of channels	4
Internal volume	12 mL/channel
Agilent 1260 Infinity Isocratic Pump	
Flow precision	≤ 0.07 % RSD or ≤ 0.02 min SD, whatever is greater; based on retention time at constant room temperature
Flow accuracy	± 1 % or 10 µL/min whatever is greater, pumping degassed H ₂ O at 10 MPa (100 bar)
Pressure operating range	Operating range up to 60 MPa (600 bar, 8700 psi) up to 5 mL/min Operating range up to 20 MPa (200 bar, 2950 psi) up to 10 mL/min
Pressure pulsation	< 2 % amplitude (typically < 1.3 %) or < 0.3 MPa (3 bar), whatever is greater, at 1 mL/min isopropanol, at all pressures > 1 MPa (10 bar, 147 psi)
Agilent 1260 Infinity Standard Autosampler Valid with standard 100 µL metering head installed	
Injection range	0.1 - 100 µL in 0.1-µL increments Up to 1500 µL with multiple draw (hardware modification required)
Precision	< 0.25 % RSD from 5 - 100 µL, < 1 % from 1 - 5 µL, variable volume
Sample viscosity range	0.2 - 5 cp
Sample capacity	100 x 2-mL vials in 1 tray 40 x 2-mL vials in 1/2 tray 15 x 6-mL vials in 1/2 tray (Agilent vials only)
Injection cycle time	Typically 50 s depending on draw speed and injection volume
Carryover	Typically < 0.1 %, < 0.05 % with external needle cleaning
Pressure operating range	Up to 600 bar (60 MPa or 8702 psi)
Agilent 1260 Infinity Thermostatted Column Compartment	
Temperature range	10 degrees below ambient to 80 °C
Temperature stability	± 0.15 °C
Temperature accuracy	± 0.8 °C with calibration ± 0.5 °C
Column capacity	Three 30 cm columns
Heat-up/cool-down time	5 min from ambient to 40 °C 10 min from 40 °C to 20 °C
Internal volume	3 µL left heat exchanger 6 µL right heat exchanger
GLP	Column identification module for GLP documentation of column type

Agilent 1260 Infinity Refractive Index Detector	
Detection type	Deflection method
Short-term noise	± 2.5 x 10 ⁻⁹ RIU
Drift	< 200 x 10 ⁻⁹ RIU/h
Refractive index range	1.00 - 1.75, calibrated
Flow cell	8 µL, 5 bar pressure maximum
Temperature control	Ambient +5 °C to 55 °C
pH range	2.3 - 9.5
Time programmable	Polarity, peak width
Zero adjustment	Automatic zero
Valves	Automatic purge and automatic solvent recycle
Data rate	Up to 37 Hz
Analog output	Recorder/integrator: 100 mV or 1 V, with offset adjustment, RIU range selectable
Communications	Local Area Network (LAN), Control Area Network (CAN), RS-232, APG remote, remote ready, start and shutdown signals
Safety and maintenance	Extensive diagnostics, error detection and display leak detection, safe leak handling, leak output signal for shutdown of pumping system, low voltage in major maintenance areas
GLP	Early maintenance feedback (EMF) for continuous tracking of instrument usage with user-settable limits (purge interval) and feedback messages. Electronic records of maintenance and errors, automated OQ/PV procedures

Ordering Information

Part Number	Description
G1310B	1260 Infinity Isocratic Pump
G1322A	1260 Infinity Standard Degasser
G1362A	1260 Infinity Refractive Index Detector
G1314F	1260 Infinity Variable Wavelength Detector
G1316A	1260 Infinity Thermostatted Column Compartment
G1328C	1260 Infinity Manual Injector
G1329B	1260 Infinity Standard Autosampler
G7850AA	Agilent GPC/SEC Software
G7854AA	Agilent GPC/SEC Instrument Control

www.agilent.com/chem/gpc

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